

(Illinois Prairie) most of the objectives are met except where drainage requires the use of small bridges and culverts.

The impact reduction measures listed below will be considered where deemed practical and feasible in the final design of the selected Alternate.

1. In some cases, the landform contrasts would be reduced through the creation of low earth mounds with waste excavation material.
2. Excavation material would be used to fill depressions formed in roadway fills on the uphill sides of swales, where depressions appear foreign to the landform.
3. Cut sections on abandoned roads would be filled with excess excavation material.
4. Similar methods of blending landforms of cut and fill slopes can be applied to borrow area excavations. Slopes would be improved by a combination of slope warping and rounding to simulate natural landform configurations.
5. In some cases, there is need to cut out fills or partial fills and redistribute the material in cuts developed in old roadways and falsework of the construction project in order to reduce landform contrasts.
6. Rock outcrops or large stable boulders found in the excavation of cut slopes would be retained in place where possible. This provides a more natural appearance by extending natural landforms into the disturbed landscape.
7. There are several ways of “aging” freshly broken rock cuts or fill material. Asphalt emulsion spray has been utilized as well as various gray paints. In some cases, liquid fertilizers may assist in more rapid formation of lichens and mosses. A high degree of contrast reduction has been accomplished by such methods in sensitive locations where roads are in key viewing backdrops.
8. Closely related to topsoil dressing of slopes is the use of mulching material of colors that blend with undisturbed soil areas. Increased revegetative potential is a by-product.
9. Since road construction can intercept surface and subsurface water flows, the downhill side of the clearing limits can experience either a reduced or increased water supply to the root systems. One of the best methods to avoid such drastic changes in water supply is to carry water off the slope at minimal intervals to more nearly duplicate the natural flows present before soil disturbance. A side benefit to such action is the reduction of possibilities for increasing surface runoff flows in natural drainage channels which could cause accelerated erosion.
10. The best end product of contrast reduction is to retain as much existing vegetation and native material as possible.
11. Closely allied to landform visual impact reduction is reducing earthwork (excavation and embankment) to the minimum, which will reduce the clearing limit requirements.
12. Structures can be utilized to retain vegetation – especially larger trees. Treewells can be utilized to save vegetation in fill sections or retaining walls can save it in cut sections. Retention of existing vegetation reduces the clearing width impact on the roadway user and screens the road from other observer positions.



13. Binwalls, although serving other purposes at times, also serve as vegetative retention features. In most cases, they serve as a retaining wall for the roadway and thus steepen the angle of the fill slope to near vertical.
14. One method of vegetative retention that often is neglected is positive action to prevent skinning bark off larger trees or crushing small trees, shrubs, and groundcover by construction equipment which moves into areas just beyond clearing limits. This protection can be accomplished by including tree-damage penalty clauses in the contract, by using stakes, snow fencing wrapped on trucks, flagging, warnings on plans and/or verbal and written communication to construction crews, and close job supervision.
15. Serrated slopes can be used to encourage the most rapid revegetation of disturbed areas. Some of the advantages of serrated slopes are:
 - a. Sloughed-in soil is not over compacted to hinder seeding success.
 - b. The serrations catch the seed and organic matter.
 - c. More moisture is retained on the slopes.
 - d. Seeding can be carried out immediately after earthwork by heavy equipment rather than after final shaping near project completion.
 - e. Rockfall pickup from shoulders and ditches is reduced.
 - f. Slope manicuring and handwork is largely reduced.
16. A key method of reducing line, form, color, and texture contrast is to feather the edges. Successful feathering involves a reduction of vegetative density in transitional degrees as well as gradation of tall vegetation down to low vegetation at the clearing edge. As a result, the contrast is faded out into a wide transitional band and focalization on an artificial line is decreased. Feathering has an added benefit of reducing possibilities of large trees falling across or onto the highway. Windthrow is less likely to occur.
17. The major constraint of meeting landscape management objectives in road construction is the introduction of contrasting elements. The first effort would be to reduce the number of visible structures. A thorough analysis will be made in the final design planning stages to insure that the structures are necessary. The structures include guardrails, guideposts, overside drains, binwalls, bridges, fences and culvert end sections. If deemed necessary, design methods to screen or reduce their visual presence will be considered. A lack of order and continuity of structural elements creates dominant focal points that are often disturbing to the viewer.
18. The introduction of earth tone color and rustification treatments to road structures can serve to enhance opportunities for blending more favorably with the adjacent natural setting.

The proposed project offers great potential for the inclusion of mitigation measures that allow for the improvement of U.S. Route 20 while blending into the existing landscape. The proposed U.S. Route 20 improvements will be designed in such a manner as to create a scenic highway that compliments the visual character of the project area.



4.13 Construction Impacts

4.13.1 Social

Short-term minor impacts to the traveling public and businesses adjacent to the construction sites are anticipated during the various phases of construction. However, for the most part, motorized and pedestrian traffic should not experience undue hardship as a result of construction activities.

The proposed project will result in the acquisition and displacement of several residences, farmsteads and business properties. Although the acquisition, demolition and relocation/reconstruction of these properties will occur prior to and during the construction phase, these impacts are considered to be long term, permanent and associated with both the construction and operation of the proposed project.

4.13.2 Air Quality

The primary potential impact on air quality from construction will be fugitive dust (particulate) resulting from soil exposed to wind and traffic. The quantity of fugitive dust from construction activities varies depending on the area of land being worked, the level of activity, the soil silt content, the soil moisture, and wind speed. While the contribution of the proposed project to the total suspended particulates in the surrounding area will be small and of a short-term duration, the construction will generate fugitive dust that may be a nuisance in nearby areas.

During construction, blowing dust from areas cleared or excavated for access or construction purposes can be minimized in several ways. Water can be applied to unpaved road surfaces with a water sprinkler truck. On roads carrying heavy construction traffic, crushed gravel can be spread in conjunction with the normal sprinkling of the road with water. The effectiveness of watering for fugitive dust control depends on the frequency of application. It is estimated that twice daily watering over the entire area would reduce dust emissions by up to 50 percent. Water will be used as necessary during construction to control fugitive dust. Construction vehicles will emit carbon monoxide, hydrocarbons and oxides of nitrogen. Ambient air concentrations in the immediate project area will not be significantly altered by operating construction vehicles and machinery.

The Department has established a Special Provision for particulate matter impacts as described in the *Standard Specifications for Road and Bridge Construction, Section 107.36, Dust Control*. Under this provision, the dust and air-borne dirt generated by construction activities will be controlled under dust control procedures for a specific plan. The construction contractor and the Department will meet to review the nature and extent of dust generating activities and cooperatively develop specific types of control techniques to that specific situation. Sample techniques include such measures as minimizing tracking out of soil onto nearby publicly traveled roads, reducing vehicle speed on unpaved surfaces, covering haul vehicles and applying chemical dust suppressants or water to exposed surfaces, particularly to surfaces on which construction vehicles travel.

4.13.3 Noise

Trucks and heavy machinery used during construction will generate noise which may affect some land use activities. However, because of the rural and agricultural character of the project area, these impacts will be minimal. In addition, specifications concerning construction noise as



outlined in Article 107.35 of the Department's *Standard Specifications for Road and Bridge Construction* as adopted January 1, 2002 requires all machinery to be equipped with proper mufflers and that construction be limited to the period between 7:00 A.M. and 10:P.M (within close proximity to sensitive receptors). These provisions also require contractors to observe and comply with all federal, state and local laws and all ordinances and regulations which in any manner affect the conduct of the work.

4.13.4 Disposal and Borrow Pits

The proposed project will require fill, particularly for the elevated portions of the roadway and roadway embankments. Some of the fill material will be borrowed from those portions of the roadway where excavation may occur. Sources of additional fill, which will not be available from excavation, will come from one or more borrow pits that may be located within and adjacent to the project area. Limited disposal of fill resulting from excavation is anticipated. Any borrow source which might be considered for the proposed project will be archaeologically surveyed, surveyed for threatened and endangered species and wetlands and cleared prior to such use. The location and use of all borrow and disposal pits will follow the requirements and specifications as set forth in the Department's *Standard Specifications for Road and Bridge Construction*.

4.13.5 Temporary Access

Access to all properties will be maintained by staged construction temporary access roads, or other appropriate means. These measures will minimize inconvenience and financial loss resulting from construction activities. Coordination with local public officials and law enforcement groups will serve to limit any long term or adverse impacts to local circulation patterns during the construction period.

4.13.6 Utilities

Roadway construction could require the temporary or permanent relocation of utilities along the project corridor including; water supply, storm water collection, sewer collection and electrical, gas and oil distribution and transmission. Construction activities will be coordinated with public utilities in order to avoid crashes and minimize planned interruptions and service. When service interruptions are unavoidable, every effort will be made to limit their duration. Coordination of construction activities with local utility officials and the implementation of staged construction would ensure that continuous service is provided to local area residents.

4.13.7 Traffic and Circulation

Construction of the proposed project would occur in various construction stages for up to a fifteen year duration. This construction could result in short-term impacts to local area residents and other users of U.S. Route 20, Illinois Routes 84, 78 and 73 and local roads throughout the project area. Potential short term impacts could include; detours, temporary congestion and longer travel times through the project area. A construction phasing plan and appropriate traffic control plan would be developed where needed as part of the final design to coordinate construction activities and minimize disruption of traffic flow and impacts for local residents and businesses. In addition, public awareness programs to inform local residents and motorists about potential construction delays and alternate travel opportunities would be implemented by the Department in cooperation with local officials.



4.13.8 Floodplains

During the construction phase, there is the potential for erosion of unprotected embankments from surface runoff and a risk of damage to unfinished drainage structures should flooding occur. Increased sediment deposition in creeks and rivers downstream is an associated impact. Best Management Practices will be employed to limit any potential for impact to the local creeks, streams and rivers which comprise the project area flood plains. In addition, all construction will be conducted pursuant the latest standards and guidelines as specified in the Department's *Standard Specifications for Road and Bridge Construction*.

4.13.9 Water Quality

The construction of the proposed project is not expected to result in any severe impacts to surface and subsurface water quality in the project area. Short-term increases in sedimentation and turbidity levels within surface water resources may be expected during construction in proportion to the proximity of excavated sites to surface water and the frequency of storms. However, turbidity and sedimentation are expected to return to baseline levels soon after construction. Temporary erosion and siltation control measures will be employed as needed to minimize silt loading and deposition in the nearby creeks, streams and rivers. Erosion control measures are specified in the Department's *Standard Specifications for Road and Bridge Construction* and recurring Special Provisions. These measures will be incorporated as part of the construction plans. Areas of high erosion potential will be identified during project design. Necessary erosion control measures will be incorporated into the construction plans as well.

4.13.10 Special Waste

The construction of the proposed project is not expected to result in any impacts relating to special waste. During construction, no special waste will be stored on site. In addition, all appropriate measures will be taken to limit the potential for any seepage of petroleum products from construction equipment into the local surface waters and drainage areas. The construction of the proposed project will require the excavation and disturbance of surface and subsurface soils. Should any of the disturbed soils be identified as contaminated above residential levels, the soils will be managed and disposed of at a licensed or approved site or facility. All sites and properties which are known to be or are potentially contaminated will be surveyed and investigated.

4.13.11 Solid Waste

Responsible construction practices will be followed to keep solid waste at a minimum through proper collection and treatment of waste material. Common disposal measures include hauling to landfills or open burning. Contractors must comply with all federal, state and local laws, ordinances and regulations. Open burning of landscape waste will require a permit from the Illinois EPA.

4.13.12 Cultural Resources

All construction activities, including but not restricted to access roads, construction camps, staging areas, maintenance areas, pipelines, detours, power lines, material storage areas and sources, waste and dump areas, etc., will be restricted to the cleared right-of-way prior to such use. This action is in keeping with federal regulations which precludes the destruction of



cultural resources when federal funds are involved. These actions shall serve to limit any potential impacts to cultural resources outside of the right-of-way.

4.14 Secondary and Cumulative Impacts

4.14.1 Introduction

A cumulative impact “is the impact which results from the incremental impact of an action when added to other past, present and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). For example, degradation of a stream’s water quality by several developments which taken individually would have minimal effects, but collectively would cause measurable negative impact is considered a cumulative effect.

Secondary impacts are those impacts which are “... caused by an action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air, water and other natural systems, including ecosystems” (40 CFR 1508.8). A Secondary, or Indirect impact is one that could occur as a result of a direct impact. Secondary and cumulative impacts of a project are distinguished from the direct effects.

Secondary impacts, which are synonymous with indirect and induced effects, are evaluated in this analysis as being those effects which are caused by the projects’ direct effects. For example, increased traffic capacity (a direct effect) can often lead to real estate development (an indirect effect). Secondary impacts are evaluated in this analysis as occurring at some distance from the project area whereas ‘direct effects’ generally occur in the immediate vicinity of the project. Cumulative impacts on the other hand, have been evaluated in this analysis based on the assumption and by definition, that they are caused by the projects direct and secondary impacts and involve other activities occurring in the vicinity of the project. The cumulative impacts considered in this analysis could occur at the same time as project construction, or at a later time depending on the timing of the other activities and impacts, can occur at some distance from the project area and are reasonably foreseeable and probable. For example, a highway project in combination with a new bridge could lead to development pressure that neither project by itself would induce.

This analysis concentrates on the potential for induced or secondary impacts as well as cumulative impacts that could occur as a result of the proposed new intersections and interchanges resulting from the Preferred Alternate, development patterns resulting from land use and zoning regulations, foreseeable and reasonable development and probable utility extensions. The analysis also focuses on the potential for Secondary and Cumulative impacts to land use, air quality, noise, cultural resources, wetlands, habitat areas, vegetation, wildlife and agriculture.

The FHWA and State of Illinois have proposed several roadway, intersection and structural improvements within the project corridor. In addition, the Department is also planning further improvements to U.S. Route 20 east of the project corridor while improvements to U.S. Route 20 west of the proposed project are also planned by the Iowa DOT. These independent projects will serve to ensure improved functional continuity between these facilities and enhance safe travel conditions along the entire project corridor between Freeport, Illinois and Dubuque, Iowa.



The proposed project is considered to be complementary to the proposed capital projects planned for within and to the east of the project corridor by the Department and to the west of the project corridor by the State of Iowa. The proposed project is also considered to be consistent with the transportation policies of the Department for northwest Illinois.

The following considers the potential for secondary and cumulative impacts that may result from the construction and operation of the proposed project and those state and federally sponsored projects planned along the project corridor.

4.14.2 Secondary Impacts

Secondary impacts of a highway project can include land development and economic development, as well as the secondary effects of land development such as increased demands on community services and facilities, and associated impacts on agricultural land uses and visual resources, and ecological resources such as wetlands. The discussion here is primarily concerned with land development. Normally, secondary land development impacts are referred to as induced development. This term is therefore used in the following sections.

Induced development refers to land use changes which can occur in the vicinity of a highway as a result of changes in access. If changes in access (i.e., changes in the time it takes to reach an area, or changes in the volume of traffic able to reach it) are sufficient to make it feasible to develop a property which otherwise would not have been developed, an induced impact can be said to have occurred. However, the assessment of an induced development impact depends upon the relative prominence of the highway project in the context of all factors affecting the feasibility of development. Many factors besides access/transportation can affect development feasibility, including population and employment growth (market factors), land availability, parcel configuration and environmental suitability (supply factors), availability of municipal services, zoning and land use plans, and local political considerations.

If a highway project is planned to serve growth that would have occurred anyway without the project, induced development impacts would be limited to locational decisions which might be influenced by the highway. This type of impact includes development close to interchanges, which affects the development prospects of specific parcels. Most highway projects which are intended to address existing or foreseen traffic congestion problems are of this *growth-serving* type.

On the other hand, if a highway is planned with the intention of altering development plans, or to stimulate economic or land use growth, it can be categorized as *growth-inducing*. Such projects are usually undertaken in undeveloped or declining areas where the lack of transportation is seen as a decisive impediment to economic growth or land use change. Such a highway might be intended to serve a specific development project, e.g., a tourist attraction, resort area, or industrial park.

The proposed project is clearly in the first category - growth-serving. One of the primary purposes of the proposed project is to provide a transportation facility that properly addresses existing and projected system deficiencies, and seeks to improve safety and efficiency. The growth of employment and tourism in the project area, plus increased truck traffic, and increased use of automobiles within the region, has led to traffic overcrowding and safety problems at several locations along this part of U.S. Route 20.

Induced development issues addressed below concern the degree to which the proposed project may influence development patterns at the regional and local levels.



4.14.2.1 Induced Regional Development

In Jo Daviess and Stephenson Counties, population and employment have remained at approximately the same levels since 1980. The principal changes have occurred in the tourist industry and second-home markets, which have been active in the Galena area. Second home construction has been occurring at a rapid rate in developments such as the Galena Territory and Apple Canyon, both in Jo Daviess County. These developments, plus the historic attributes of Galena, have led to an increase in traffic flow from the Chicago metropolitan area.

The literature is mixed on the subject of the regional development impacts of highways. Most analysts agree that new highways can stimulate development under the right circumstances. However, that impact is felt most strongly in the vicinity of metropolitan areas¹⁵. Specifically, after research in Minnesota, Stephanedes¹⁶ found that the effects of transportation improvements on development tend to be strongest in areas where services are widely available and a good highway network already exists. This occurred in regional centers and counties "under urban influence". Research conducted nationwide by Briggs¹⁷ concluded that while Interstate Highways were responsible for stimulating development in many counties, the experience of individual counties was extremely varied. He suggested that the overall, multi-state impact of the Interstate Highway System was of principal significance. With respect to rural counties, he found little evidence for significant influence on population or employment growth.

On the other hand, research on development in Pennsylvania by Eyerly¹⁸ has shown that between 1970 and 1980, rural counties with Interstate Highway interchanges tended to grow at a somewhat more rapid rate than the state as a whole. This was true for population, employment, and property values. This research did not conclusively address the question of whether or not this development would have occurred anyway without the Interstate highways. Many other factors besides transportation facilities can affect development at the county and regional levels. These include considerations such as labor availability, natural resources, attractiveness to tourists, and the existence of institutions such as colleges and universities. However, it can be reasonably concluded that in at least some of the Pennsylvania cases, the overall pattern of regional development was affected by the Interstate Highway System.

The research on regional development influence of highway projects is summed up well by Hartgen in his study of the role of transportation in county economic growth and development: "High growth does indeed occur in high-access counties, but high-growth counties also have superior socio-economic status, higher wages, and a more diversified economic base."¹⁹ In other words, the nature of the local economic situation will largely dictate the significance of a highway project's development impacts.

In the project area, there are trends operating which may be as important, or more important, than highway accessibility. The most important of these trends, which have been discussed above and elsewhere in this document, is probably the attractiveness of Galena for tourism and

¹⁵ Forkenbrock, et.al., *Road Investment to Foster Local Economic Development*, University of Iowa, May 1990, includes an excellent literature review on this subject. See p. 33ff.

¹⁶ Stephanedes, Yorgos J., *Distributional Effects of State Highway Investment on Local and Regional Development*, Transportation Research Record 1274, 1990.

¹⁷ Briggs, Ronald, *Interstate Highway System and Development in Non-metropolitan Areas*, Transportation Research Record 812, 1981.

¹⁸ Eyerly, Raymond W., et.al., *Interstate Highway System: Reshaping the Non-urban Areas of Pennsylvania*, Transportation Research Record 1125, 1987.

¹⁹ Hartgen, David T., et.al., *The Role of Transportation in County Economic Growth and Development*, University of North Carolina at Charlotte, 1989.



the second-home market. This is counterbalanced by the long-term tendency of population and employment to remain static in Jo Daviess and Stephenson Counties.

In this situation, several scenarios are possible. The proposed project could enhance the region's growth prospects because it facilitates travel here by tourists; or, growth could continue to be depressed by static population and employment, in spite of the improvements.

Another possible scenario is that the failure to implement the proposed project could negatively influence development: increased traffic congestion and crashes on U.S. Route 20 could have an inhibiting effect, making the area less attractive to businesses, tourists and second-home owners. In this scenario, there could be reduced or even negative growth. This scenario is a reasonable possibility, based on the perceptions of local business people and officials, as elicited in two recent surveys. According to a survey of business people regarding economic growth in Jo Daviess and Stephenson Counties²⁰, roadway safety on U.S. Route 20 “emerged as a central theme from survey responses.” In this survey, 16 percent of respondents made written comments mentioning that roadway safety is a problem on U.S. Route 20. Over a fifth of the business people “reported that they have difficulty shipping/receiving products or delivering services via existing U.S. Route 20 due to its condition.” In a 1994 survey of officials in Galena and Jo Daviess County, approximately 60 to 70 percent of the respondents indicated that the “number of driving hazards created by tourists” is one of the negative impacts of tourism in the area²¹. The roadway conditions contributing to these comments, if not addressed by the proposed project, are likely to have a more significant impact on businesses and tourism as time passes.

In summary, the proposed project may allow existing and projected development trends to continue as currently foreseen, rather than significantly altering them. If the proposed project is not constructed, the limitations of the existing U.S. Route 20 may serve to limit future growth and development.

4.14.2.2 Induced Local Development

Local development in connection with a new limited- or controlled-access highway may under certain conditions be expected to take place in the vicinity of interchanges. Research has been conducted concerning some specific types of land uses that might be expected to develop near rural interchanges. Other research concerns highway-related developments such as larger commercial land uses, including shopping centers and so-called “big-box” stores offering a variety of merchandise, and industrial and warehousing land uses. The following sections are organized to reflect the research: first, land uses specifically related to rural interchanges are discussed, followed by a discussion of larger-scale uses, and then industrial/warehousing land uses.

4.14.2.3 Induced Development Research

Research in North Carolina has demonstrated that development can occur in the vicinity of rural interchanges of interstate highways, under certain conditions²². As with regional development, there are several important factors involved in this type of development, including

²⁰ Johnson, Depp and Quisenberry Consulting Engineers, *U.S. Route 20 Economics Development Work Group*, November, 1994.

²¹ Department of Leisure Studies, University of Illinois at Urbana-Champaign, *Tourism 2000: A Conceptual Plan for Tourism in Galena and Jo Daviess County*, August, 1994, Table 4, p. 17.

²² David T. Hartgen, et.al., *Interstate 40 Economic Impact Study: Final Report*, University of North Carolina at Charlotte, November, 1991.



considerations such as the availability of public water and sewer facilities, crossing road traffic volumes, the distance to other interchanges, distance to other interstate highways, and distance to the nearest town. The influence of these factors will determine if the area around an interchange will be suitable for development.

In the North Carolina research, threshold values were developed for certain kinds of land uses likely to be located around rural interchanges: motels, gas stations, fast-food restaurants, sit-down restaurants, and single-family residential. Based upon those threshold values, criteria were developed to assess the likelihood of this type of development at the interchanges that would be constructed under the proposed project. The criteria are shown starting below.

Low-density residential development in the vicinity of an interchange tends to become more likely if an interchange is near a town, and if there is less likelihood of commercial development. In other words, if conditions are suitable for commercial development, residential development is generally less likely to occur. Therefore, those interchanges which are the least suitable for commercial development are more suitable for residential, provided that there is a nearby town.

Criteria for Development Suitability at Proposed U.S. Route 20 Interchanges

Motels:

Would have good prospects for development if the interchange:

Is less than 1.6 kilometers (1 mile) from public water and sewer service.

Has crossing road traffic volumes of 4,000 vehicles per day or more.

Is less than 32 kilometers (20 miles) from the nearest intersecting Interstate Highway.

Gas Stations:

Would have good prospects for development if the interchange:

Is less than 1.6 kilometers (1 mile) from public water and sewer service.

Has crossing road traffic volumes of 10,000 vehicles per day or more.

Is less than 1.6 kilometers (1 mile) from the nearest town.

Fair prospects if the interchange:

Has crossing road traffic volumes of 5,000 vehicles per day or more.

Is less than 5 kilometers (3 miles) from the nearest town.

Fast-Food Restaurants:

Would have good prospects for development if the interchange:

Is less than 1.6 kilometers (1 mile) from public water and sewer service.

Has crossing road traffic volumes of 7,000 vehicles per day or more.

Is less than 32 kilometers (20 miles) from the nearest intersecting interstate highway.

Fair prospects if the interchange:

Has crossing road traffic volumes of 5,000 vehicles per day or more. Is less than 5 kilometers (3 miles) from the nearest town.

Sit-Down Restaurants:

Would have good prospects for development if the interchange:

Is less than 1.6 kilometers (1 mile) from public water and sewer service.

Has crossing road traffic volumes of 10,000 vehicles per day or more.

Is less than 8 kilometers (5 miles) from the nearest intersecting Interstate Highway.



Residential Development:

Would have good prospects for development if the interchange:

Has crossing road traffic volumes of *less than* 10,000 vehicles per day.

Is less than 1.6 kilometers (1 mile) from the nearest town.

Fair prospects if the interchange:

Has crossing road traffic volumes of *less than* 20,000 vehicles per day.

Is less than 5 kilometers (3 miles) from the nearest town.

These criteria were applied to the proposed U.S. Route 20 interchanges. The data was then aggregated to draw overall conclusions regarding these land uses at each interchange, as shown on Tables 4-47 and 4-48. The following discussion evaluates the Freeway and Expressway Alternates (Alternates 1-12) in two sections; between Galena and Woodbine and between Woodbine and Freeport.

Galena to Woodbine

The Long Hollow, Irish Hollow, and Expressway Alternates were considered in this analysis for this section. Alternates 5, 6, 8 and 9, the Irish Hollow Tunnel Alternates, would not materially affect the results of this analysis, and therefore these alternates were not considered separately.

Three interchanges are common to all the Alternates: Illinois Route 84 in Rawlins Township, northwest of Galena; old U.S. Route 20/Illinois Route 84 east of Galena, near Horseshoe Mound; and, old U.S. Route 20/Illinois Route 84 near Devils Ladder Road.

Commercial development of any kind would probably be inhibited (but not impossible) at each of these locations, and all other interchanges between Galena and Woodbine, because of a combination of relatively low crossing traffic volumes, distance to crossing interstate (or limited access) highways, and lack of water and sewer service. At the interchange near Horseshoe Mound (old U.S. Route 20/Illinois Route 84 east of Galena), low-density residential development might be feasible because of a low volume of crossing traffic and proximity to Galena.

However, if municipal water and sewer services were to be provided at either of the interchanges near Galena, the development feasibility could change substantially. Commercial development in the form of fast food restaurants and gas stations could become feasible at these locations, and low-density residential development would probably be correspondingly less feasible. Existing water and sewer service are about 2.4 kilometers (1.5 miles) from each of the proposed interchange locations.

According to the city of Galena,²³ there are no current plans to extend municipal water and sewer service in the direction of either interchange. Such extension would involve annexation of the lands to be served. This would mean substantial additions to the area within the boundaries of the city of Galena.

Long Hollow Freeway Alternates (Alternates 1 and 2)

Besides the three interchanges common to all the alternates, one other interchange is proposed along the Long Hollow Alternate between Galena and Woodbine (see the Woodbine-Freeport

²³ Interview, Andy Lewis, City Engineer, City of Galena, June 30, 1999.



TABLE 4-47
U.S. ROUTE 20 IMPROVEMENTS PROJECT
DEVELOPMENT FEASIBILITY INTERCHANGES
OVERALL RATING BY LAND USE CATEGORY
GALENA TO WOODBINE

LONG HOLLOW ALTERNATE:				
	Interchange:			
Land Use Type	Illinois Route 84 North	Horseshoe Mound	Devils Ladder	Elizabeth/ Illinois Route 84 Ext.
Motels	B	B	B	B
Gas Stations	B	B	C	B
Fast-Food Restaurants	B	B	B	B
Sit-Down Restaurants	B	C	C	C
Residential Development	B	A	B	B

IRISH HOLLOW ALTERNATE:						
	Interchange:					
Land Use Type	Illinois Route 84 North	Horseshoe Mound	Devils Ladder	Illinois Route 84 South	Elizabeth	Woodbine
Motels	B	B	B	B	B	B
Gas Stations	B	B	C	C	B	B
Fast-Food Restaurants	B	B	B	C	B	B
Sit-Down Restaurants	B	C	C	C	B	C
Residential Development	B	A	B	B	A	A

EXPRESSWAY ALTERNATE:						
	Interchange:					
Land Use Type	Illinois Route 84 North	Horseshoe Mound	Devils Ladder	Illinois Route 84	Pleasant Hill Road	Woodbine
Motels	B	B	B	B	B	B
Gas Stations	B	B	B	B	B	B
Fast-Food Restaurants	B	B	B	B	B	B
Sit-Down Restaurants	B	C	B	C	B	C
Residential Development	B	A	C	B	A	A

Legend:

A = Most Desired

B = Desired

C = Somewhat Desired

Source: The Louis Berger Group, 1998, 1999.



TABLE 4-48
U.S. ROUTE 20 IMPROVEMENTS PROJECT
DEVELOPMENT FEASIBILITY INTERCHANGES
OVERALL RATING BY LAND USE CATEGORY
WOODBINE TO FREEPORT

EXPRESSWAY ALTERNATE:					
	Interchange:				
<i>Land Use Type</i>	Woodbine	Canyon Park Road	IL. 78	IL.73	Bolton Rd.
Motels	C	C	C	B	B
Gas Stations	B	B	B	A	B
Fast-Food Restaurants	B	B	B	A	B
Sit-Down Restaurants	C	C	C	B	B
Residential Development	Most Desired	A	A	B	B

FREEWAY ALTERNATE:						
	Interchange:					
<i>Land Use Type</i>	Woodbine	Canyon Park Road	IL. 78	IL. 78 Alternate	IL. 73	Bolton Rd.
Motels	C	C	C	B	B	B
Gas Stations	C	B	B	A	A	B
Fast-Food Restaurants	C	B	B	A	A	B
Sit-Down Restaurants	C	C	C	B	B	B
Residential Development	Most Desired	B	B	B	B	B

Legend:

A = Most Desired

B = Desired

C = Somewhat Desired

Source: The Louis Berger Group, 1998, 1999.



section below for a discussion of the Woodbine Road interchange): at an extension of Illinois Route 84, about 3.2 kilometers (two miles) northwest of Elizabeth. The area around this proposed interchange is not currently served by water or sewer service, its crossing traffic volume is modest, and it is distant from other interchanges. All of these factors would tend to limit commercial development opportunities. It is also too distant from Elizabeth to make it attractive for low-density residential development. However, if water and sewer service were to be extended to this location, it could become more attractive for commercial development. At this time, and in the near future, there are no plans for the extension of such service.

Irish Hollow Freeway and Expressway Alternates (Alternates 3-10)

Besides the three interchanges common to all alternates, these alternates are similar in their interchange configuration. There are two interchanges proposed in the vicinity of Elizabeth, one at Illinois Route 84 between 4 and 5 kilometers (2.5 and 3 miles) west of Elizabeth, and one at Pleasant Hill Road immediately south of the town. There is also one interchange with old U.S. Route 20 near Fahrion Road, about 1.2 kilometers (0.75 mile) southwest of Woodbine. With water and sewer service not presently available at any of these locations, there would probably be somewhat limited opportunities for commercial development. However, because of the close proximity of towns (Elizabeth and Woodbine) to the Pleasant Hill and Fahrion Road interchanges, these could be attractive locations for low-density residential development. This type of development is already taking place south of Elizabeth adjacent to Pleasant Hill Road. Even if water and sewer service were to be extended to any of these three interchange locations, their attractiveness for commercial development would probably not change significantly, because of relatively low crossing traffic volumes.

Woodbine to Freeport

Both the Freeway and Expressway Alternates were evaluated along this section. Alternates 1-10 include an alternative location of the interchange with Illinois Route 78. Alternates 11 and 12 east of Lena would not materially affect the results of this analysis, and therefore were not considered separately.

Expressway Alternates (Alternates 11 and 12)

There are five proposed interchanges along Alternates 11 and 12: south of Woodbine at Brown Road; at Jo Daviess County Road 10 (Canyon Park Road) about 4 kilometers (2.5 miles) west of Stockton; at Illinois Route 78 one mile east of Stockton; at Illinois Route 73 about 1.2 kilometers (0.75 mile) south of the village of Lena; and at Bolton Road at the eastern terminus of the proposed project.

Only one interchange between Woodbine and Freeport was considered as a reasonable candidate for interchange-related commercial development: Illinois Route 73 near the village of Lena. This location has close proximity to water and sewer service, and has the crossing traffic volumes considered necessary to support motels, restaurants and gas stations. However, development here would probably be limited to fast-food restaurants and gas stations because Lena is not close enough to an intersecting Interstate highway to support motels or sit-down restaurants.

The proposed Expressway Alternates interchange at Brown Road near Woodbine, which would be very unlikely to attract commercial development, and yet has a town in very close proximity, would be the most likely of the expressway interchanges to attract residential development.



The extension of water and sewer service to any of the interchanges could improve the prospects for commercial development at the Illinois Route 78 and Bolton interchanges. The others would be substantially unaffected. There are currently no such plans for water or sewer extensions.

Freeway Alternates (Alternates 1-10)

The proposed interchanges along the Freeway Alternates are in approximately the same locations as the Expressway Alternates. The interchange near Woodbine is to the west of Woodbine on Woodbine Road, rather than to the south on Brown Road. The interchanges at County Road 10, Illinois Route 78, and Illinois Route 73 along the Freeway Alternates are less than a mile north of the Expressway Alternates' interchange locations.

The potential for development at the Freeway Alternate interchanges is nearly identical to those of the Expressway Alternatives, with the following exceptions:

1. If the Illinois Route 78 interchange (in which Illinois Route 78 is diverted to the west and then south into Stockton) under the Freeway Alternates 2,4 and 6 is constructed, the potential for development could increase because the proposed interchange is closer to Stockton. This interchange would be closer to water and sewer service, and closer to existing development.
2. The Freeway Alternates (Alternates 1-10) interchange near Woodbine would be located to the west and north of the town, rather than south, as with the Expressway Alternates (Alternates 11 and 12). The Freeway Alternates interchange would be somewhat farther which would tend to reduce the potential for residential development in its vicinity.
3. The Freeway Alternates (Alternates 1-10) interchange at Bolton Road could generate potential development at or in close proximity to the interchange. Although market trends and regional economic conditions will dictate the potential at this interchange, the provision of utility services and accommodating land use ordinances could serve to strengthen the desirability of development at this interchange.

4.14.2.4 *Larger-Scale Commercial Development*

Shopping centers and "big-box" stores such as Wal-Mart, K-Mart, or Home Depot, require highway locations because of the high volume of traffic they attract. With this type of commercial development, there are many other site location factors which must also be considered, such as the size of the potential market, availability of water and sewer services, distance from other shopping centers or "big-box" stores, proximity to existing downtowns (central business districts, or CBDs), parcel sizes and configurations, and so forth.

Accepted standards for commercial land use site location categorize²⁴ shopping centers into three types: neighborhood, community, and regional. Neighborhood shopping centers typically serve populations of around 4,000 persons, and are located on secondary or local roads. This type of commercial land use does not require an interchange location. Community shopping centers comprised of between 50 and 40 stores normally require locations near intersections of major highways or expressways. They serve populations of around 35,000 people. Regional shopping centers with 40 to 80 or more stores typically serve populations in excess of 150,000 persons, and require access from major highways and expressways.

²⁴DeChiara, Joseph, and Lee Koppelman, *Urban Planning and Design Criteria*, Second Edition, Van Nostrand Reinhold Company, New York, 1975.



Applying these standards to the project area, the most likely candidate for location near a U.S. Route 20 interchange would be something between a neighborhood and community shopping center, if other site location factors are also present. Neighborhood shopping centers already exist in this area, and do not require an expressway location, while the population density required to support a regional shopping center does not exist in the project area. Community shopping centers, as defined in the standards, would be somewhat larger than could be supported by the generally low population density of the area west of Freeport. However, research demonstrates that “big-box” stores, particularly those which offer a variety of goods and services that are normally found in small-town CBDs, have siting criteria which could make them suitable for possible location within this region²⁵.

Based upon the research, some specific siting requirements for “big-box” variety stores include:

- ▶ Population densities of not less than 75 persons per square mile (i.e., more than 5,900 people within 8 kilometers [5 miles]), and preferably more than 200 persons per square mile (around 16,000 persons within 8 kilometers [5 miles]).
- ▶ Locations on State highways, but not necessarily expressways.
- ▶ Locations within 3.2 to 8 kilometers (2 to 5 miles) of expressways preferred but not required.
- ▶ Water and sewer service is required.
- ▶ Locations within 3.2 kilometers (2 miles) of an existing town's CBD (nearly all “big-box” stores are so located). Locations of not less than 8 kilometers (5 miles), and preferably 16 to 32 kilometers (10 to 20 miles), from the nearest store of the same chain.

The cities of Freeport and Dubuque are the only locations of “big-box” stores within or near the Galena-Freeport corridor. These towns are 101 kilometers (63 miles) apart, which suggests that the area in between might be suitable for another such store. However, a review of population densities along the U.S. Route 20 corridor indicates that opportunities for such a store would in fact probably be quite limited. Population densities of the areas within eight kilometers (five miles) of incorporated towns along the corridor in 1990 are shown in Table 4-49.

Only the cities of Freeport and Galena meet the minimum criterion for population density. The proposed interchange at Horseshoe Mound is located approximately 3.2 kilometers (2 miles) from the Galena CBD.

Five of six criteria for a “big-box” store would be met at the proposed interchange west of Galena. The only criterion that would not be met is water and sewer availability. Without the proposed U.S. Route 20 improvements, four of the six criteria would still be met at the same location. The ones not met include: location within 3.2 to 8 kilometers (2 to 5 miles) of an expressway; and, water and sewer availability. The existence of a nearby expressway is desirable but not indispensable for a “big-box” store, because the customer base is normally comprised of people who are accustomed to traveling to a nearby CBD. However, without water and sewer availability, a large store could not be built outside of Galena proper. This is therefore the primary consideration, and has nothing to do with whether or not the proposed project is implemented. In fact, within the corporate limits of Galena, five of the six criteria are currently met, including water and sewer. Therefore, a “big-box” store could be built in Galena regardless of whether or not the proposed project is implemented.

As a general rule, “big-box” stores, as well as shopping centers, combine services normally provided in a CBD, placing them under one roof at a location within a few miles of the CBD,

²⁵The Louis Berger Group, Inc., study of site locations of a major “big-box” store in Illinois, December, 1998.



TABLE 4-49
POPULATION DENSITIES OF THE AREAS WITHIN FIVE MILES

Incorporated Town	1990 Population Density (persons per square mile within 8 kilometers [5 miles] of the town)
Galena	78.1
Elizabeth	29.9
Stockton	47.1
Lena	57.3
Freeport	433

Source: The Louis Berger Group, Inc., 1998.

making it convenient and comfortable for users of the CBD to do their shopping at the new location. The city of Galena CBD is the largest concentration of commercial land uses between Dubuque and Freeport. Its market area is large, probably extending five to ten miles to the west and over 32 kilometers (20 miles) to the east. The only other sizeable population concentrations in the region are at Stockton and Lena, both of which are much closer to Freeport than Galena. Regardless of whether or not the proposed project is constructed, shoppers in those areas are unlikely to consider traveling to Galena rather than Freeport. Therefore, it is not reasonable to conclude that the market area of Galena's CBD would be extended by the proposed project.

Based upon the above, the proposed project is unlikely to have a significant influence on the development of new shopping centers or "big box" stores along the project corridor.

4.14.2.5 Industrial and Warehouse Development

There is little doubt that transportation is an important component of industrial and warehousing site selection. Catalone²⁶, conducting a study of major firms in Kentucky, organized the elements of a firm's competitive position into five primary activities: inbound logistics, outbound logistics, operations, marketing, and service. He concluded that transportation quality is a significant factor in the economic health of a firm.

However, as was the case with other types of land uses, there are many factors besides access to highways which must be taken into account in industrial site selection. Wilson²⁷ surveyed firm owners to elicit the importance of thirteen industrial location factors in site selection for several industrial categories in eastern Canada. The factors included, among other things, proximity of plant sites to markets and raw materials, labor availability, residence location of the owner, availability of utilities, and access to transportation. The last factor included categories

²⁶ Catalone, Roger, *Analysis of Transportation Logistics and Industry Competitiveness: Importance of Transportation Logistics to Kentucky Firms*, Southeastern Transportation Center, 1989.

²⁷ Wilson, et.al., *Impact of Transportation on Regional Development*, Transportation Research Record (TRR) No. 851. 1982



for highways, rail, and air service. On average, access to highways ranked fourth on the list of the thirteen factors, exceeded in importance by proximity to markets, labor availability, and proximity to the owner's residence. Manufacturers rated highway access sixth of the thirteen factors. In the food processing industry, highways ranked third on the list, exceeded only by proximity to raw materials and residence location of the owner.

In a survey of manufacturers in North Carolina, Hartgen²⁸ identified five general siting areas of concern consisting of 34 siting factors. One of the areas of concern involved transportation, and two of the siting factors were specifically related to highways. The other areas of concern included labor, site and utilities, quality of life, and business services. Regional highway access was rated as sixth in importance on the list of 34 factors, and local access by road was tenth. Hartgen concluded that the most important industrial siting policy issues for North Carolina were labor force quality and education. Nonetheless, highways and access in general were among the more important concerns to industry leaders.

Analysis of whether the project area would be suitable for specific kinds of industries is complex and beyond the realm of this analysis. However, the area might be suitable for food processing businesses such as in Stockton, because of the region's proximity to supplies and the large Chicago market. However, the influence of the proposed project on these types of businesses would be uncertain because so many other factors are involved. It is unlikely that the proposed project would be the most significant factor in such site location decisions.

Typically, most of the goods movement to and from manufacturing firms is by truck. Hartgen's 1991 TRR study found that around 90 percent of all goods are received or shipped by truck. Only around one-fifth of these trips, however, originated or were destined for locations within 50 miles of the plant site. More than half were long-hauls to other regions of the U.S. Therefore, truck warehousing and transshipment facilities are an important regional factor which should be considered in relation to the proposed project.

To identify whether or not the proposed project would stimulate the location of trucking terminals or warehouses in the project area, research was conducted by the Department to determine how the siting of major trucking facilities in northern Illinois relates to the project area²⁹. The locations of distribution facilities of six major trucking companies in the northern Illinois - Iowa region were identified. These locations suggest the importance of certain trucking routes within the region, and help to indicate if the U.S. Route 20 corridor might be a suitable area for a distribution facility. Table 4-50 presents the locations of the major distribution facilities in northern Illinois and nearby Iowa.

These locations are dictated largely by the national highway network. All of the cities listed above are at the intersection of two or more interstate highways which provide east-west access between Chicago and points west, and north-south access between Madison-Milwaukee; Springfield-St. Louis and points south. These corridors are major goods movement arteries. U.S. Route 20 is not currently a major goods movement artery. Traffic volumes of heavy trucks on U.S. Route 20 are substantially below what is considered normal for rural portions of the interstate highway system, indicating that U.S. Route 20 is not a preferred trucking route. Heavy trucks on U.S. Route 20 comprises between 6 and 7.5 percent of total traffic volumes, while heavy trucks on rural portions of the entire Interstate Highway system typically comprise more

²⁸ Hartgen, David T., et. al., *Manufacturers' Views of Transportation's Role in Site Selection*, Transportation Research Record No. 1305, 1991.

²⁹ The Louis Berger Group, Inc., study of site locations of major trucking firms in northern Illinois and Iowa, December, 1998.



**TABLE 4-50
LOCATIONS OF MAJOR
TRUCKING DISTRIBUTION FACILITIES
IN NORTHERN ILLINOIS AND IOWA**

Location	Number of Major Trucking Distribution Facilities
Boiling Brook, IL	1
Des Moines, IA	2
Des Plaines, IL	1
East Moline, IL	1
Rockford, IL	3
Rock Island, IL	2

Source: The Louis Berger Group, Inc., 1998.

than 25 percent of traffic³⁰ As a limited-access highway, U.S. Route 20 currently terminates in Waterloo, IA, and does not lead to any major markets to the west. U.S. Route 20 in Dubuque is not a limited access highway, which results in a bottleneck problem. Additionally, the principal access to the U.S. Route 20 corridor from Chicago is via I-90, which is a toll road.

In conclusion, it is unlikely that the proposed project alone will induce industrial development in the project area, due to the fact that there are so many other factors to be considered. Some specific industries, such as food processing, might find the area attractive because of proximity to raw materials and markets, and the proposed project could be an additional attractive factor. Currently, however, U.S. Route 20 is not a major truck route, and it is unlikely to attract significant warehousing facilities. There are several factors that businesses consider when choosing a location for a move or expansion. Some of these factors are related to the transportation system others are related to local economic, infrastructure, and political conditions. These conditions include:

- Local and Regional Accessibility – Businesses are dependent on access to transportation networks for:
 - Access to local markets and suppliers.
 - Access to regional or national markets and suppliers.
 - Access to pool of skilled labor.
 - Transportation projects that substantially improve local or regional accessibility can make an area more attractive to businesses. Studies indicate, however, that transportation access alone is often not sufficient.

³⁰ U.S. Department of Transportation, *Highway Statistics, 1997*, Washington, D.C., November, 1998, Table VM-1, p. V-89.



- Extent and maturity of existing transportation infrastructure - influence of highway projects diminishes with successive improvements because each new improvement brings a successively smaller increase in accessibility.
- Inexpensive, Developable Land – Land availability and price are key determinants of development; property values are de-facto indicators of the potential for land use change because investment decisions revolve around market prices.
- Agglomeration Economies – Firms in the same industry groups tend to locate near one another for easier access to specialized services, suppliers, and skilled employees.
- Infrastructure – In addition to transportation infrastructure, many firms require easy access to water, sewer, power, and telecommunications infrastructure.
- State of the regional economy - even if changes in accessibility are great, development is not likely to occur if the regional economy will not support new jobs and households.
- Area vacancy rates - high local vacancy rates in housing or commercial space of good quality may be absorbed before any shift in development to the project area is seen.
- General location attractiveness - quality of existing development, local politics, growth history, are all factors considered in addition to transportation availability and cost.
- Land use controls - development is shaped by zoning ordinances and other land use controls that influence the amount of land available for various uses, the densities permitted, and the costs of development.
- Economic development incentives – Local and state incentive programs such as tax abatements and loan programs can also influence business location decisions.

Where transportation projects do influence land development, the general tendency is toward relatively high density commercial or multi-family residential development near facility nodes in urban and suburban areas and single-family residential development in the urban fringe.

Development effects are most often found:

- up to 1.6 kilometers (one mile) around a freeway interchange
- up to 3.2 to 8 kilometers (two to five miles) along major feeder roadways to the interchange

In local areas economic development growth can be encouraged by promoting local assets and ensuring a low cost and reliable regulatory process. Desirable development can be guided into growth areas using local land use planning and regulations and highway access controls. Undesirable forms of development can also be regulated through careful planning and land use regulation.

4.14.3 Cumulative Impacts

To assess cumulative impacts, other projects were considered to determine if they would change the impacts of the proposed project. Two types of projects were considered: highways and utility extensions. Either of these, depending on their location and size, could potentially alter the impacts of the proposed project.



4.14.3.1 Highway Projects

The Transportation Improvement Programs (TIPs) of Illinois and Iowa were reviewed to determine if there are planned highway projects that could have an effect on U.S. Route 20. The TIPs contain schedules for transportation facility construction between 1999 and 2003, and also include planning studies and discussions of projects farther into the future.

Except for the proposed project, no other major highway capacity expansions are planned in the northwestern part of the state by the Department. Bridge replacements and resurfacings are planned on I-80 and I-74 in the Moline area, which will facilitate traffic movement in this key goods movement corridor. Resurfacing is also planned for the U.S. Route 20 bypass south of Rockford. None of these improvements, however, will add significant traffic capacity.

Other major highway projects throughout Illinois were also considered. The majority of these improvements are in the resurfacing and reconstruction categories. The major capacity expansion projects are all located in distant parts of the state, and would have little impact on traffic along U.S. Route 20.

Several projects in Iowa could affect traffic on U.S. Route 20:

- ▶ *Bypass and New Mississippi River Bridge in Dubuque:* These improvements would extend from U.S. Route 20 west of Dubuque, crossing the Mississippi River and tying back into U.S. Route 20 in Jo Daviess County. Functioning as a bypass south of Dubuque, they would relieve the current bottleneck where U.S. Route 20 passes through Dubuque. These projects are in the planning stage at present, and are not scheduled in the Iowa TIP.
- ▶ *U.S. Route 151 Corridor between Dubuque and Cedar Rapids:* U.S. Route 151 is being expanded to four lanes in this area. This could facilitate additional traffic movement between U.S. Route 20 in Illinois and Des Moines. The improvements are scheduled for completion in 2003.
- ▶ *The "Avenue of the Saints":* This project is intended to connect the Twin Cities in Minnesota to St. Louis with a four-lane highway. Part of the project between Waterloo and Mason City, IA, an expansion of U.S. Routes 18 and 218 to four lanes, including bypasses of towns along the route, is scheduled for completion in 2003. This will provide additional traffic capacity from U.S. Route 20 in Waterloo to the I-35 corridor heading toward the Twin Cities.
- ▶ *U.S. Route 20 four-lane route across Iowa:* Plans call for making U.S. Route 20 entirely a four-lane highway crossing Iowa from Dubuque to Sioux City. A key link in this plan is the construction of about 64 kilometers (40 miles) of new four-lane highway between Waterloo and I-35, to be completed in 2004.

The completion of these projects comprises part of Iowa's "Commercial and Industrial Network", which is intended to "support economic development through transportation investments"³¹. The primary impact of these projects would be to facilitate goods movement, and hence truck traffic, along these routes, as noted above. All of the above projects tie into U.S. Route 20 in Illinois, and could facilitate truck movement to markets in Des Moines and west, and the Twin Cities and west, perhaps making U.S. Route 20 through the project area more attractive to truck depots and warehouses, thus increasing truck traffic.

³¹ Iowa Department of Transportation, 1999-2003 *Iowa Transportation Improvement Program*, 1999.



However, there are several factors which will probably act to delay, or reduce, this impact. First, an important link in the Iowa network is the bypass south of Dubuque and the Mississippi River bridge. These projects are being planned now, and must pass through a NEPA EIS review before construction can start. Allowing five years for construction in addition to the review period would place completion of these projects into the indefinite future, perhaps even beyond the planning horizon for the U.S. Route 20 improvements (2020). Second, the I-80 corridor is the established east-west goods movement route in this region of the U.S. Increased congestion or highway deterioration on I-80 would be required to divert truck traffic from this corridor. By scheduling maintenance projects on I-80, the Department is taking measures to prevent this from happening. Third, I-90, the principal westerly route from Chicago to the U.S. Route 20 corridor, is a toll road. This can be a discouragement to truck traffic.

In view of this, significant cumulative highway impacts associated with the proposed project are considered unlikely in the foreseeable future.

4.14.3.2 Reasonably Foreseeable Development

Recent development initiatives in Stephenson County focus primarily on the annexation of certain territory to the village of Lena. Initiated by Ordinance No. 00-138, three large parcels of land were annexed to the village of Lena for the purpose of promoting industrial development. This annexation will support industrial development of these parcels as a Statewide Tax Increment Financing District. As a Tax Increment Financing District, the incremental taxes generated by industrial development on these parcels would be directed towards the costs of infrastructure and utility improvements within the District. At this time, the Ethanol Plant, now under construction on these parcels, is expected to be completed by the summer of 2002. An industrial park is also planned within this District. The location of these annexed parcels is depicted in Figure 4-10.

The annexation of these parcels and their subsequent development for industrial development are not solely dependent on the construction of the proposed project, although Alternates 1-10 will directly impact this District. County officials envision the proposed project as directly supporting development on these annexed parcels. Although not considered an inducement to development within the District, the construction of the Freeway or Expressway Alternates in the vicinity of the District may serve to accelerate the planned development within the District. In this regard, County officials consider the development of a new Freeway or Expressway in proximity to the site as a localized economic benefit of the proposed project.

There are no new redevelopment or development projects or major utility expansions planned within the county other than the village of Lena annexed parcels. Although not planned, the Stephenson County Future Land Use Plan does accommodate business development in the vicinity of the proposed Bolton Road/U.S. Route 20 interchange. According to the plan, business development would be allowed in the southwest quadrant of the interchange beyond the limits of the flood plain of the Petonica River tributary. This interchange is considered by local officials as the "Western Gateway Into the City of Freeport".

Stephenson County places strong restrictions on development within flood hazard areas. Section 17.00 of County Ordinance 01-10-259 serves as the legal power of the county to restrict development within flood hazard areas, or as identified in the ordinance, the base flood elevation for the flood plains of the Petonica River and Yellow Creek.





















In Jo Daviess County, development within floodplains and floodways is restricted and/or controlled pursuant to the regulations as set forth in Section 4.6 of the Jo Daviess County Zoning Ordinance. This section of the ordinance was established to avoid or lessen potential hazards to persons, property or buildings resulting from floodwaters, to protect stream channels from encroachment, to maintain the capacity of the floodplain to convey floodwaters, to provide for the development of floodplain lands not subject to flood damage and which are compatible with other uses permitted in various districts and to avoid creation of new flood problems. Specifically, these regulations do not allow any building or structure to be erected, constructed or moved to the floodway as determined by FEMA, the elevation of the ground upon which anything to be constructed would be required to be a minimum of one foot above the established 100-year flood crest for at least 10 feet around such construction and that any new streets constructed will not be less than two feet above the established crest elevation. Floodplain development restrictions are further identified in Section F of the Jo Daviess County Comprehensive Plan. This section of the plan identifies certain areas as environmental corridors. These areas, which generally follow streambeds, are considered to be sensitive and are identified as areas to be preserved. These areas to be conserved are consistent with the implications of Section 4.6 of the zoning ordinance, which restricts certain types of development within floodplains and floodways. These environmental corridors are considered by the comprehensive plan to be no-build zones. Pursuant to the Jo Daviess County Comprehensive Plan, no development other than parks and recreation is proposed within floodplains and floodways.

As a result of the restrictions placed on development by the Jo Daviess and Stephenson County zoning and floodplain ordinances, the proposed project is not expected to induce or promote any incompatible development within the project area's floodplains or floodways.

In Jo Daviess County, the following projects are in varying stages of the planning, development and approval process. These projects are depicted on Figure 4-10.

Golf View Subdivision: This subdivision currently exists east and south of the U.S. Route 20 and Illinois Route 84 interchange in Rawlins Township. Approval for townhouse development on the eastern end of this development had been approved but building has not commenced. Private water and sewage utilities are available to all of the proposed buildable lots. Preliminary indications show there is potential for additional development north of the proposed Freeway Alternates.

Buckhill Subdivision: This subdivision is in the preliminary stages of development and has not been approved. Early indications show the potential for as many as ten possible lots, all of which will be served by private water and sewer service.

MEDIACOM: MEDIACOM buried fiber optic cable in May of 2002 to provide service to The Galena Territory. This cable extends from Powderhouse Hill Road east of Galena to the intersection of Mt. Hope Road with existing U.S. Route 20 and lies beneath the proposed Freeway interchange in the vicinity of Horseshoe Mound. At this time, no additional development is expected as a result of this expanded utility/service line.

Walnut Ridge: Walnut Ridge is an approved fifty-unit Assisted Living development located in Section 27 of East Galena Township. Although approval was granted, to date construction has not commenced. Seventy acres encompass this development, however only five to six acres will be used in the westernmost portion for building sites. Historic structures will be restored for use in this project. A private lagoon is included in the plan for wastewater storage.



Heller Hollow Subdivision: This existing seven-lot subdivision was recently created in Section 15 of East Galena Township, adjacent to Stagecoach Trail near the point where the Galena Bypass crosses Stagecoach Trail.

Longhollow Point Condominiums: This fifty to sixty unit condominium is located at the intersection of existing U.S. Route 20 and Longhollow Road, adjacent to the main entrance to The Galena Territory. Although this approved development has been in existence for some time, it is currently in bankruptcy and the proposed private sewage lagoon is seventy-five percent completed but non-operational.

River Ridge School District: Construction of the consolidated school district building (Section 27, Elizabeth Township) began in May 2002, with completion projected for the fall of 2003. Access is provided from Illinois Route 84. Private water and sewer will serve this seventy-acre campus.

Evans and Wienen Subdivisions: These small subdivisions (Evans – three lots) and Wienen – two lots) are located in Section 3, Elizabeth Township in the Longhollow Alternate Corridor. Private water and sewer will serve both subdivisions.

Woodbine Bend Golf Course & Restaurant: Woodbine Bend Golf Course and Restaurant is an 18-hole links type golf course located directly south of Woodbine (Section 15, Woodbine Township) which opened for business in the spring of 2002. Private water and sewer serves this development. This project will impact the proposed Woodbine Interchange along the Freeway Alternate Corridor.

Stockton Subdivision: This newly created subdivision is located south of existing U.S. Route 20 in Section 11, Stockton Township. It is located adjacent to Stockton and will be annexed into the city. City water and sewer will serve this development.

Agricultural Fertilizer/Chemical Business: This business, located in Section 5, Wards Grove Township, has been granted a special-use permit for the expansion of its current business site. Private water and sewer exist at this location.

The proposed project is considered by Jo Daviess County to be consistent with the intent of and the extent to which the various development projects are being advanced. Specifically, the proposed project is considered to be a local benefit to these development projects, as regional access to and from the development projects would be greatly enhanced. The proposed project is not envisioned as promoting or inducing these various development projects.

In addition to the above, the following projects are in varying stages of the planning and approval process in the city of Galena. These projects are depicted on Figure 4-10.

*Galena Scenic Meadows*³²: A 78.5 hectare (194-acre) development located north of the existing U.S. Route 20 in northeast Galena. It will be comprised of six commercial lots, one large commercial lot (Walmart), 10 to 13 office lots, 16 multi-family residential lots, 73 single-family residential lots and two parks. It is slated for completion in late 2002.

*Plume Subdivision*³³: A small development located in northwest Galena. It will be comprised of two commercial lots and 39 single-family residential lots.

³² Suzanne Hollingsworth, Zoning Officer, City of Galena, Interview, April 25, 2002.

³³ Ibid.



*Timp Residential Subdivision*³⁴: A small development located in southeast Galena, east of the Galena River and north of the existing U.S. Route 20. It will be comprised of 20 lots and greenspace.

*Galena Industrial Park*³⁵: An industrial development located in northwest Galena, north of Chetlain Lane and west of the existing U.S. Route 20. It will be comprised of ten lots and an elevated water tower.

Any cumulative effects of utility extensions in association with the proposed project would be limited to the interchanges south of the village of Lena. This area has already been identified as being feasible for certain types of commercial development.

4.14.3.3 Land Use and Zoning Patterns

No significant secondary or cumulative impacts are anticipated to result from the construction or operation of the proposed project. The proposed project is considered to be consistent with the latest land use and zoning elements of the comprehensive plans for both Jo Daviess and Stephenson Counties. However, the proposed project could indirectly affect land use changes and growth by facilitating earlier development or more development than anticipated or planned for in the project corridor. With improved accessibility and improved travel conditions, travel times would decrease while travel through and within the project corridor could also increase. Development would most likely occur in a manner consistent with local zoning and planning. Pressure to change existing zoning and land use in favor of rapid development probably would be greatest near and adjacent to the proposed interchanges, especially those at Bolton Road, Illinois Route 73, Illinois Route 78 and Illinois Route 84. Changes in zoning and comprehensive planning are the responsibility of local jurisdictions. Since the cumulative effects of zoning decisions made by jurisdictions acting independently can quickly overwhelm local and regional roads, it is important for the local communities to recognize the potential development trends and work together to coordinate zoning and land use planning initiatives so that future development and development pressure that may be realized from the proposed project can be controlled and planned in the best interest of the local communities.

4.14.3.4 Air Quality

The project area is located in an attainment area for all six NAAQS pollutants. The proposed project meets the Conformity Rules by not causing any new violations of the NAAQS. The predicted CO concentrations for the proposed project are well below the NAAQS for CO. Since the future traffic volumes for the proposed project considered planned roadway improvements within the project corridor by the State of Illinois and the State of Iowa as input into the CO predictions, no cumulative air quality impacts are anticipated. Since the proposed project will be phased construction and will be constructed independent of the other planned roadway projects, no construction related cumulative impacts are anticipated.

4.14.3.5 Noise

Although some increased noise levels are anticipated within the project area from the operation of the proposed project, no cumulative or secondary impacts are anticipated. The predicted noise levels considered the future traffic levels associated with the proposed and planned road improvements within and to the east and west of the project corridor by the States of Illinois and Iowa. These proposed transportation projects are being considered by the States of Illinois and

³⁴ Ibid.

³⁵ Ibid.



Iowa independently of the proposed project. Since the predicted future noise levels associated with the project considered the future traffic volumes of these planned improvements along with the proposed project, no secondary or cumulative impacts are anticipated.

4.14.3.6 Groundwater/Water Quality/Floodplains

The proposed project along with the other proposed roadway improvements within and to the east and west of the project corridor will contribute in some measure to the loading of groundwater and nearby drainage areas with sediments and chemical pollutants. This impact will result from the paving of surface area and increase in impervious hectares (acres) in the project area. Where at all possible, Best Management Practices will be employed during construction. In addition, all construction activity will be conducted pursuant to the requirements as set forth in Section 107.01 of the Department's *Standard Specifications for Road and Bridge Construction* as well as the monitoring and guidance standards as set forth in the Department Water Quality Manual. Groundwater impacts would be localized without any cumulative impacts.

Water resources may also be affected by the volume and quality of runoff from secondary developments. Local storm water ordinances often require compensatory storage at rates greater than 1:1 for flood plain encroachments, thus actually increasing the available storm water storage. The hydrology of surface waters, recharge rates for groundwater, and runoff pollutant composition and concentration could change, depending on the type and extent of any secondary developments that may occur as a result of the proposed project. The type and magnitude of the changes depend on the type, density and location of the development. Secondary impacts from this development could also result in cumulative effect over time.

It is not anticipated that the proposed project will generate significant growth or induced development. Although some development could occur at and around some of the proposed interchanges along the freeway and expressway alignments, no large scale commercial or industrial development or uncontrolled or significant growth is anticipated. As a result, no significant secondary or cumulative impacts to water quality, flood plains or groundwater are anticipated.

4.14.3.7 Cultural Resources

The proposed project is not expected to result in any secondary or cumulative impacts to historic sites or sensitive archaeological areas. Although some direct impacts to these resources may be expected, subject to the results of more detailed surveys, these impacts are not at this time, considered to be cumulative in nature. At present, there are no other currently planned or proposed projects that would impact cultural resources sites, so that there are no cumulative impacts which would affect the viability of these resources.

4.14.3.8 Vegetation/Wildlife Habitat/Threatened and Endangered Species

Illinois forests have undergone drastic changes in the decades since European settlement. In 1820, 13.8 million acres of forest existed in Illinois. Only 31 percent (4.26 million acres) of the forest area present in 1820 remained in 1980 and essentially all of the present forests are considered to be secondary forest. Illinois ranks 49th in the percentage of land remaining in its original vegetation type (11 percent). Nonetheless, forest area has been increasing in the state. Forest area increased by 10 percent from 1962 through 1985, primarily due to reduced cattle production. Recent farm programs, such as the Conservation Reserve Program and the Illinois



Forestry Development Act, have provided incentive to convert additional marginal acres to forestland. More than 90 percent of the commercial forests in Illinois are privately owned. In Jo Daviess and Stephenson Counties, forest land makes up 19 percent and 5 percent, respectively, of the area of the county (Illinois DENR 1994, Illinois DNR 1996).

The proposed project is not expected to result in any significant secondary or cumulative impacts to vegetation, wildlife habitat or threatened and endangered species. The proposed project will result in direct impacts to vegetation, wildlife habitat and sensitive species. However, these impacts are not expected to be significant. The potential for indirect or secondary impacts are not expected to be significant. The proposed project is not expected to generate any new development or roadway projects other than those planned under the proposed project design. Since noise, air quality, storm water runoff and impacts to surface water resources are not expected to be significant, and, by introduction of Best Management Practices and appropriate mitigation, no unforeseen indirect or cumulative impacts are anticipated.

4.14.3.9 Wetlands

Illinois wetlands have greatly diminished since pre-settlement days. The primary cause of the depletion of Illinois wetlands is from drainage for agricultural purposes. Only 371,414 hectares (917,765 acres) of natural wetlands remained in Illinois by the 1980's, which accounts for only 10% of the estimated 3.8 million hectares (9.4 million acres) of original wetlands. Only 2,429 hectares (6000 acres) of the wetlands remaining are high quality and undisturbed. The remaining natural wetlands have been severely reduced in quality because of sedimentation, pollution, or other impacts of modern society. Existing wetlands, including both natural and modified wetlands, occupy 507,443 hectares (1,253,891 acres) of Illinois in the 1980s.

Wetlands would be affected by changes in hydrology, water quality and as a result of the placement of fill. Secondary and cumulative impacts to wetlands could result from increased development other than the construction activities associated with the proposed project. Additional development would increase the chance that wetlands in the area would experience a decrease in water quality which could affect the wetland habitat characteristics. These secondary impacts to wetlands may be tempered by the U.S. Army Corps. of Engineers' regulations governing wetland permits, as well as local storm water management ordinances. Since project related impacts to wetlands will be governed by the regulations of the U.S. Army Corps. of Engineers and the IDNR, and since the proposed project is not expected to result in any significant growth and development, no cumulative impacts to wetlands are anticipated. However, some development may occur around and at several of the proposed freeway or expressway interchanges and intersections. This development could directly impact wetland areas. Under these circumstances, secondary impacts to wetland areas could result. However, local zoning ordinances and land use controls could serve to control and limit development in and around wetland areas. Federal permitting requirements will also serve to limit any significant secondary impacts to wetland areas within the project corridor.

The proposed project is also not envisioned as inducing development within wetlands which would result from the implementation of the planned road and interchange or intersection improvements by the State of Illinois. These road improvements are being planned independent of the proposed project. Although wetland impacts could result from these projects, federal and state permitting regulations and requirements would serve to limit the potential for cumulative impacts to these wetland areas. The potential for cumulative impacts to wetlands within the project corridor will also be offset by mitigation requirements through the replacement of wetlands of equal value and function.



4.14.3.10 Agriculture

Of the affected municipalities within the project area, only Galena and Freeport have adopted comprehensive plans that exclude land already in or committed to urban development or water storage. The development of the remaining agricultural land is likely to occur gradually as a result of existing minor housing and recreational pressure. Agricultural land is located throughout the entire project area, except where upland forested areas, wetlands, other cover types, and developed land currently exist. The existing housing and recreational pressure is concentrated around the southern portion of the Galena Territory and just west of Woodbine. The likelihood of the existing agricultural land remaining in agricultural use seems good — at least for the foreseeable future.

4.15 List of Commitments and Mitigation Measures

The Department is committed to implementing the following mitigation measures for the impacts associated with the construction of the proposed project:

Wetland Loss:

The preferred alternate will impact approximately 1.48 hectares (3.65 acres) of wetlands. It is proposed to mitigate these impacts by purchasing wetland credits from the Kilbuck Creek Bank south of Rockford, if approved by the Corps and Illinois DNR. This bank site is located within the Rock River Drainage Basin. It is estimated that approximately 8.69 hectares (21.48 acres) will need to be purchased by the Department at a cost to be determined at the time of purchase.

Native Prairie Restoration: The Department will purchase the 4.21 hectare (10.4 acre) landlocked parcel (T-1356 3208) located north of Buckhill Road (between right Station 649+00 and 666+00). The parcel will be seeded with native prairie vegetation using the appropriate species from Class 4 and 5 seeding mixture contained in the Department's "Standard Specifications for Road and Bridge Construction" (January 2002). This action will mitigate the 1.34 hectare (3.3 acres) of native grassland that will be impacted by the preferred alternate.

After planting the parcel to native prairie vegetation, the Department will transfer this landlocked parcel (described above) to IDNR.

Reforestation/

Habitat Fragmentation:

The Department will purchase six landlocked parcels (T-2878 3394, T-2472 2265, T-694 3931, T-697 3929, T-3460 3861, and T-2806 2761) that occur between the preferred alternate alignment and the Tapley Woods Land and Water Reserve. The parcels total 84.92 hectares (209.85 acres). The areas that are not wooded and suitable for trees will be planted with native tree species. This action will mitigate the loss of 110.90 hectares (274 acres) of forest due to the construction of the preferred alternate. By planting trees in the parcels adjacent to Tapley Woods, a larger contiguous tract of forest will develop over time. This large block of forest is required by many species of forest birds to nest



successfully. This type of mitigation would also be beneficial to neotropical migrant birds that nest in the project area. This will also create a larger protected buffer area for the Timber Rattlesnake.

After planting the Department will transfer these landlocked parcels (described above) to IDNR.

The Department will replant riparian trees and shrubs in the floodplains within highway right of way of the Galena River, Apple River, Smallpox Creek, Unnamed Tributary of Long Hollow Creek, Furnace Creek, and Yellow Creek and its tributaries. The Department will also attempt to obtain agreements with the adjacent property owners to plant trees and shrubs on their property within the riparian corridor.

Wildlife Barriers:

In an attempt to eliminate some of the barriers created by the new roadway to wildlife movement, the bridges are being designed with longer spans. The spans will be extended to provide a minimum of 10 feet of dry ground above the 50-year flood elevation on each side of the stream. This will allow wildlife movement along the stream corridors.

At least seven culverts, especially those proposed near Stations 960, 1002, 1069, 1108, 1126, 1190, and 1215, will be constructed to have an opening that is wider than the normal stream channel. These culverts will be a minimum of 10 foot by 10 foot (depending on the "Openness Ratio for Deer"). This will allow for safe wildlife crossings including the Timber Rattlesnake in the Tapley Woods area.

The Department will install both medium and large sized culverts in some of the fill areas near the Tapley Woods area. The specific locations will be determined as part of the Phase II design of the roadway. These culverts will not be associated with drainage, but will allow wildlife a safe passage across the roadway. These culverts will be a minimum of 5 foot by 5 foot for medium size and spread 500 to 900 feet apart, and 10 foot by 10 foot for large size that are spread 0.6 to 0.7 miles apart.

Fencing is an important component of wildlife crossings. The proposed project design includes the standard 1.2m (4 ft.) high fencing along the right of way line. In addition to this fencing, a special 2.5m (8 ft.) high fence will be installed at the wildlife crossings (culverts and bridges) to "funnel" wildlife into the crossings. Fencing will also be installed in the median, if the crossing (bridge or culvert) opens in the median, to prevent wildlife from getting onto the roadway.

Culverts constructed in the fill areas cannot be designed to open in the median. Since ambient light is a critical factor for usage of wildlife underpasses, light will be provided by placing two vaults near the center of the culverts. The vaults would be placed on the



median slopes and would be grated. The grated vaults would be above the median ditch flow line to prevent excessive drainage into the culverts.

Timber Rattlesnake: At least seven culverts, especially those proposed near Stations 960, 1002, 1069, 1108, 1126, 1190, and 1215, will be constructed to allow for safe crossing of the roadway by the Timber Rattlesnake in the Tapley Woods area.

A herpetologist from the Illinois Natural History Survey will be employed to determine whether or not the timber rattlesnake occurs within the construction limits before construction begins and during construction in the roadway section near the Tapley Woods Land and Water Reserve. The herpetologist will begin the survey about one month before construction begins.

Highly Erodible Soils: The areas of Highly Erodible soils will be shown or listed in the Design Report. At the time of construction, the Department will contact the industry to determine the best method to use to stabilize these soils.

4.16 Short-Term Use and Long-Term Productivity Relationship

The short-term uses of the environment are generally those associated with construction. Consequently, short-term environmental impacts would include air pollution resulting from emissions and dust from construction equipment. Construction equipment would also temporarily increase noise levels in the area. Water quality and ecological resources would be temporarily impacted. The removal of ground cover during construction activities could lead to erosion and sedimentation and turbidity in area streams. These impacts will be minimized by implementing erosion control techniques, as stipulated in the current *Standard Specifications for Road and Bridge Construction*.

The most evident long-term benefit of the construction of the proposed project would be improved local and regional accessibility and travel safety. Efficient travel speeds would save motorists time and lower vehicle operation costs. In addition, the removal of area traffic from non-access controlled roadways would reduce the potential for crashes.

Long-term economic benefits resulting from the construction of the proposed project would include increased tax revenues and employment. Initially, the removal of properties from the tax base for construction of the road would reduce tax revenues for various taxing districts. However, the improved access resulting from the construction of the proposed project would provide an opportunity for economic growth by expanding market areas and making the area more attractive to new development. New and expanded businesses would in turn create new employment opportunities.

4.17 Irreversible and Irretrievable Commitments of Resources

Implementation of the proposed project will involve a commitment of a wide range of natural, physical, human and fiscal resources. The land used in the construction and operation of the



proposed project is considered to be an irreversible commitment during the time period that the land is used for construction and during the operational periods. Should, however, a greater need arise for the use of the land, or should the proposed project no longer be needed, the land can be converted and committed to another use, although at this time, there is no indication that such a need or conversion would be necessary or desirable.

The proposed project will require the use of various types of fossil fuels, electrical energy and other resources during the construction and operation of the proposed project. These resources are considered to be irretrievably committed to the project. At this time, these resources are not in short supply and considered to be readily available to the proposed project. As a result, the use of these resources is not expected to result in an adverse effect upon the continued availability of these resources. The proposed project will also require the commitment of various types of construction materials, including cement, aggregate, steel and asphalt (bituminous materials), electrical supplies, piping and other raw materials such as metal, stone, sand and fill material. Additionally, large amounts of labor and natural resources will need to be committed to the fabrication and preparation of these construction materials. This commitment of resources is considered to be irretrievable. However, these resources and materials are also not in short supply, and their use will not result in any adverse effect upon their continued availability. Much of the material accumulated for construction may at some time be recycled or used for fill or for some other use. These resources should, however, be viewed as irretrievably committed to the project.

The construction and operation of the proposed project will also require the commitment and expenditure of county, state and federal funds which will not be available for other projects and activities. This commitment of resources is considered to be irretrievable.

The proposed project is not expected to result in any non-beneficial impacts to pristine areas, wetlands or habitats. Although the commitment of land is considered to be an irreversible commitment, it is not expected to be adverse in light of the opportunity for appropriate mitigation and the availability of suitable alternative habitats in the nearby area. However, all of the alternates will result in the permanent loss of agricultural land. This loss is considered to be irreversible.

The operation of the proposed project could result in an increase in the pace of development and, although not necessarily expected, some potential induced development in the project area. Also, although not expected, some potential induced development in nearby adjacent areas could result that otherwise would possibly occur if the proposed project were not constructed. Though the nature of this potentially accelerated and secondary development can be controlled through the application of appropriate land use regulations, acceleration of development projects or any unanticipated or induced development that may result is, for all practical purposes, an irreversible commitment of resources (land and materials).

The commitment of resources as a result of the proposed project is based upon the concept that residents and businesses in the project area and throughout the region will benefit by improved local and regional access, the overall improvement of regional road transportation, and improvement to the transit network. These benefits would include: improved regional and local accessibility; improved safety; savings in travel time and energy; improved access to many of the region's transportation, commercial, recreational, residential and cultural facilities; and enhanced air and noise quality. All of these benefits are anticipated to outweigh the irretrievable and irreversible commitment of these resources.

